

1. A valve for a printing apparatus that uses liquid ink, the valve comprising:

a valve seat at least partially surrounding an opening through which ink flows;  
a valve stop positioned downstream from the valve seat, wherein the valve stop includes a contact surface positioned at an acute angle to the valve seat; and  
a valve plate interposed between the valve seat and the valve stop, wherein the valve plate seats against the valve seat when in a closed position and the valve plate rests against the valve stop when in an open position.

2. The valve of claim 1, wherein the valve plate is situated substantially vertically.

3. The valve of claim 1, further comprising a valve moat adjacent an outer periphery of the valve seat.

4. The valve of claim 1, wherein the valve plate is positioned between the valve seat and the valve stop such that the entire valve plate can move laterally between the valve seat and the valve stop.

5. The valve of claim 1, wherein the valve seat is recessed in a bore that defines a ledge upon which the valve plate rests.

6. The valve of claim 1, wherein the contact surface of the valve stop defines at least one depression into which ink flows.

7. The valve of claim 1, wherein the angle at which the contact surface relates to the valve seat is about 5 degrees.

8. A print head for an ink jet printer comprising:  
a first passage in communication with an ink source;  
a surface having an orifice for delivering ink to an associated print media and/or drum, wherein the orifice communicates with the first passage;

a second passage in communication with the first passage and an associated pressure source; and

a valve member disposed in the first passage upstream from the second passage, wherein the valve member is adapted to move between an open position and a closed position, when in the open position the valve allows ink to travel towards the orifice and when in the closed position the valve inhibits ink from traveling towards the ink source.

9. The print head of claim 8, further comprising a valve seat and a valve stop positioned downstream from the valve seat, wherein the valve member seats on the valve seat when in the closed position and the valve member abuts the valve stop when in the open position.

10. The print head of claim 9, wherein the valve stop includes a contact surface downstream from and at an acute angle to the valve seat.

11. The print head of claim 10, wherein the acute angle is about 5 degrees.

12. The print head of claim 10, wherein the contact surface defines at least one depression to expose a portion of the valve member to pressure from the associated pressure source when the valve member is in a closed position.

13. The print head of claim 9, further comprising a valve moat adjacent a periphery of the valve seat.

14. The print head of claim 8, further comprising a relief passage defined along the passage adjacent the valve member, wherein the relief passage reduces the resistance of flow of ink around the valve member when in the open position.

15. The print head of claim 14, wherein the relief passage is positioned above the valve member.

16. The print head of claim 8, wherein the valve member comprises a substantially vertically disposed plate.

17. A printer including the print head of claim 8.

18. A print head for a printing apparatus that uses liquid ink, the print head comprising:

an ink bucket for storing ink received from an associated ink source, the ink bucket in communication with a passage defined in the print head;

a surface defining an orifice for ejecting ink out of the print head, wherein the orifice is in communication with the passage;

means for applying pressure to the passage separate from ink stored in the ink bucket; and

a valve disposed in the passage, wherein the valve opens in response to pressure applied by ink stored in the ink bucket and closes in response to pressure applied by the pressure applying means.

19. The print head of claim 18, wherein the pressure applying means includes a fitting in communication with an air pressure source.

20. The print head of claim 18, wherein the valve includes a disc-shaped plate vertically disposed in the passage.